

## EXPLORATION OF FACTORS CAUSING DIFFICULTIES IN LEARNING MATHEMATICS IN ELEMENTARY SCHOOL STUDENTS

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### Abstract :

*In general, elementary school students consider mathematics as a subject that requires in-depth understanding due to its abstract nature. This study aims to identify the factors causing difficulties in learning mathematics in fourth-grade students of MI Al Ma'arif Sidolaju. This study is a qualitative study with a case study approach, the methods used are observation, interviews, and documentation. The research subjects included the principal, teachers, and 8 fourth-grade students. Data analysis used in this study were data reduction, data presentation, and drawing and verifying conclusions. The results of the data analysis indicate that the learning difficulties of MI Al Ma'arif Sidolaju students are difficulty understanding basic concepts, difficulty remembering formulas, difficulty understanding and solving problems. Factors causing difficulties in learning mathematics are internal factors, namely lack of basic skills, learning motivation, and physical health, external factors, namely the use of media or learning aids, and family situations. Various efforts made by teachers in overcoming learning difficulties are by providing motivation, providing learning assistance, establishing communication with parents, and designing more innovative learning. Thus, through this study, it can provide a deep understanding in developing effective learning.*

**Keywords :** Learning Difficulties; Mathematics; School students

### Abstrak :

Secara umum siswa usia dasar menganggap matematika sebagai mata Pelajaran yang membutuhkan pemahaman mendalam karena sifatnya abstrak. Penelitian ini bertujuan untuk mengidentifikasi faktor faktor penyebab kesulitan belajar matematika siswa kelas IV MI Al Ma'arif Sidolaju. Penelitian ini merupakan penelitian kualitatif dengan pendekatan studi kasus, metode yang digunakan ialah observasi, wawancara, dan dokumentasi. Subjek penelitian meliputi kepala sekolah, guru dan siswa kelas IV berjumlah 8 orang. Analisis data yang digunakan dalam penelitian ini adalah reduksi data (data reduction), penyajian data (data display), dan Penarikan serta pengujian kesimpulan (drawing and verifying conclusion). Dari hasil analisis data menunjukkan bahwa kesulitan belajar matematika siswa MI Al Ma'arif Sidolaju ialah kesulitan dalam memahami konsep dasar, kesulitan dalam mengingat rumas, kesulitan dalam memahami dan menyelesaikan soal, faktor penyebab kesulitan belajar matematika ialah faktor internal yaitu kurangnya kemampuan dasar, motivasi belajar, dan kesehatan tubuh, faktor eksternal yaitu penggunaan media atau alat peraga pembelajaran, dan situasi keluarga. Beragam upaya yang dilakukan guru dalam mengatasi kesulitan belajar ialah dengan memberikan motivasi, melakukan pendampingan belajar, menjalin komunikasi dengan orang tua, dan mendesain pembelajaran yang lebih inovatif. Sehingga melalui penelitian ini mampu memberikan pemahaman yang mendalam dalam mengembangkan pembelajaran yang efektif.

**Kata Kunci :** Kesulitan Belajar; Matematika; Siswa Usia Dasar

## INTRODUCTION

Mathematics is a science that plays a vital role in everyday life. It can encourage critical thinking while studying it. It has significant benefits in improving thinking and argumentation skills. Mathematics also makes a vital contribution to solving everyday problems, and it also provides valuable support for the development of science and technology. The presence of mathematics can play a crucial role in accelerating economic, technological, and industrial development worldwide (Adewale & Moyo, 2025).

Mathematics learning in elementary schools focuses on basic material that introduces mathematical concepts, which can develop systematic, analytical, and critical thinking skills through simple, everyday learning content. This material includes algebra and numbers, as well as geometry and measurement. Therefore, the presentation of mathematics learning in elementary schools should provide a deep impression in internalizing the values of logical thinking and systematic analysis through various media and concrete sources so that mathematics learning objectives can be achieved in terms of content and intersect with national goals (Yuni et al., 2024).

This is because elementary school students are children aged between 6 and 13. At this age, a person enters a transitional period from childhood to adolescence, which we know requires special attention, both personally and universally. Children at this age are in the process of discovering their interests and talents, a process that sometimes raises doubts that disrupt students' learning activities. The role of education here is not only to transfer knowledge, but is also expected to develop students' creativity (Rahmah & Zulaekah, 2025).

Based on the description above, mathematics plays a crucial role in transforming human life because it transforms human thought patterns to become more critical, logical, systematic, and analytical. This mindset is fundamental to life. People with this mindset will be wise in life, always calm in finding solutions to every problem that arises. In other words, they will be better prepared to face life. During the learning process, the teacher's role is not only to teach but also as a friend, companion, colleague, and mentor. This ensures that activities can run smoothly. Meanwhile, the student's role here is as a learner who receives the subject matter delivered by the teacher (Lathifaturrohmah AJ & Yunikawati, 2022).

Based on the researcher's initial observations, difficulties in learning mathematics still occur at MI Al-Ma'arif Sidolaju, especially in grade IV, where

out of 43 students, there are still several children who experience difficulties in learning mathematics. The difficulties experienced are difficulties in solving problems, especially on story problems. These learning difficulties are influenced by several factors, namely internal factors originating from the students themselves, and external factors originating from outside the students themselves, such as teachers, parents, and the environment. From these problems that arise, it has an impact on the next academic level and also has an impact on decreasing student learning motivation, so that student learning achievement also decreases.

Research on the analysis of factors of mathematics learning difficulties has previously been conducted by Alma Diniarti, et al. This study explains that the learning difficulties experienced by fifth-grade students of SDN 31 Mataram are divided into three components. First, there are difficulties with visual perception disorders, which indicate problems in processing visual information related to mathematics material. Second, there are difficulties in recognizing and understanding mathematical symbols, which includes difficulties in understanding the concepts and notation used in mathematics lessons. Third, there are difficulties in using mathematical language and reading, which indicate difficulties in understanding mathematics material presented in text or problem form. These mathematics learning difficulties are caused by difficulties in understanding basic mathematical concepts such as basic arithmetic operations, and difficulties in applying mathematical concepts in solving word problems (Dhea Alfira & Siregar, 2024).

Research conducted by Artiasih (2022) explains that the difficulties in learning mathematics in solving story problems in fourth-grade students at Tambakrejo 03 Elementary School include difficulty understanding concepts, difficulty in skills, and difficulty in solving problems. Factors causing difficulties in learning mathematics come from internal and external factors. Internal factors come from the students themselves, including IQ or intelligence, student attitudes in participating in mathematics lessons, and low student learning motivation. Meanwhile, external factors come from outside the students, including a lack of variation in teacher teaching, suboptimal use of learning media, facilities and infrastructure at the school, and the family environment. Efforts that can be made to overcome difficulties in learning mathematics include the use of concrete learning media, increasing practice questions, and establishing cooperation with students' parents.

Research conducted by Zuliani & Puspita Rini (2021) explains that the difficulties students experience in learning mathematics include difficulty reading and understanding the meaning of questions, difficulty understanding mathematical concepts, difficulty using formulas and symbolic notation, and difficulty in the calculation process. This is evident from the results of tests in solving problems that still experience difficulties. The factors causing students to experience learning difficulties consist of two factors: internal factors originating from the students themselves such as learning motivation, student intelligence, and student attitudes during mathematics learning, and external factors, namely factors originating from outside the students such as the learning methods used by teachers, learning media, and family environment (Zuliani & Puspita Rini, 2021).

The innovation in this research is to analyze the characteristics of learning difficulties, identify the factors causing them, and the efforts teachers make to provide solutions to the learning difficulties experienced by fourth-grade students in mathematics. Therefore, the research focuses not only on the students themselves but also on the teachers and the students' environment.

Based on the results of initial observations and interviews with fourth-grade teachers of MI Al Ma'arif Sidolaju, data obtained showed that most students still find it difficult to understand mathematics lessons and do not like the lesson. This study aims to determine the factors causing difficulties in learning mathematics in fourth-grade students of MI Al Ma'arif Sidolaju. The low mathematics learning outcomes of students are caused by students' difficulties in participating in learning activities, this can be seen from several students whose scores do not reach the minimum completion criteria. Through this study, it is hoped that solutions can be found to overcome these problems, so that students are able to develop their potential to the maximum and are expected to have a positive impact on the development of students' mathematics quality in Elementary Education.

## **RESEARCH METHODS**

This research uses a qualitative approach with a case study approach. A qualitative approach is based on the philosophy of postpositivism, used to examine the conditions of natural objects, where the researcher is the key instrument (Darmanto, 2019). Qualitative research is descriptive and tends to use an inductive analysis approach. The emphasis is on the research process and the use of a theoretical foundation so that the research focus aligns with the facts on

the ground (Yam, 2024). This study was conducted to identify and provide a systematic description of the factors causing fourth-grade students to experience difficulties learning mathematics.

This research was conducted at MI Al Ma'arif Sidolaju. Participants in this study consisted of the principal, a fourth-grade teacher, and eight fourth-grade students at MI Al Ma'arif Sidolaju. Data collection techniques used included observation, interviews, and documentation. Observations were conducted to directly observe the situations and conditions occurring in the school environment, while interviews were conducted with participants to obtain their views and understanding of the research topic. Documentation was used to collect data from official documents, such as lesson plans, student records, and student learning outcomes (Creswell, 2017). Data analysis used in this study included data reduction, data display, and drawing and verifying conclusions. Data analysis techniques are the process of systematically searching and organizing data obtained from interviews, field notes, and other materials so that they can be understood and the findings can be communicated to others (Atiaturrahmaniah et al., 2021).

## **FINDINGS AND DISCUSSION**

### **Characteristics of mathematics learning difficulties**

Each student has a different understanding of mathematics learning materials. This difference is due to their intelligence level. The characteristics of mathematics learning difficulties in fourth grade at MI Al Ma'arif Sidolaju are as follows:

Difficulty in spoken and written language. This difficulty arises from low student literacy, making it difficult for students to understand questions. There are challenges in prerequisite skills, namely students having difficulty understanding basic mathematics material, for example, arithmetic operations. This is because many students haven't memorized the multiplication tables from 1 to 10, so when they encounter problems involving arithmetic operations, they struggle.

Based on the characteristics of students' mathematics learning difficulties, there are three aspects of mathematics learning difficulties experienced by fourth grade students at MI Al Ma'arif Sidolaju, the third aspect is that the first is that it is difficult to understand the basic concept. These difficulties represent obstacles to understanding, internalizing, applying, and connecting basic mathematical principles. These difficulties stem from an inability to solve problems,

understand formulas, or apply mathematics in everyday life. Furthermore, these difficulties are also caused by internal factors, such as a lack of motivation to learn mathematics and the perception that mathematics is a boring subject.

Difficulty remembering formulas. This difficulty is caused by students' weak memory. This is due to a lack of practice in memorizing mathematical formulas, as mathematics requires students to actively memorize.

Difficulty understanding and solving problems. Based on the results of an interview with Mr. Munif, the fourth-grade teacher, it was found that some fourth-grade students were still unable to solve the given problems, both simple arithmetic operations and word problems. This was evident in the students' learning outcomes when working on the practice problems. Many students had difficulty understanding the sentences in the problems, making it difficult for them to copy them into mathematical sentences.

This is in line with the research findings by Baiq Yuni and Hidayati (Yuni et al., 2024) regarding mathematics learning difficulties, which showed that some students still struggle to solve mathematical problems, starting with difficulties in linking information and integrating it. This is evident when students work on problems with unstructured answers. This is also caused by students' inability to understand basic arithmetic concepts. Teachers play a crucial role in this regard, namely as companions during the learning process (Siti Nadia Laila & Irnie Victorynie, 2025).

### **Factors Causing Learning Difficulties**

Lack of basic skills (intelligence). Basic skills (intelligence) are crucial for every student. Interviews revealed that fourth-grade students demonstrated low levels of basic skills. This was evident in the large number of students who still struggled to memorize multiplication tables from 1 to 10.

Motivation to learn. Learning motivation plays a crucial role in achieving learning success. Motivation is a factor that arises from within the student. The greater the student's motivation, the greater the learning success they achieve. However, analysis results show that student learning motivation remains relatively low. This is due to the perception that mathematics is a boring subject, one that always involves numbers, and one that lacks excitement. Therefore, when students hear the word "mathematics," they often appear lethargic.

Body health. Physical health is a crucial factor in learning. A common health issue that impacts students is poor physical health. This condition can affect students' concentration, leading to failure to achieve academic success.

Use of media or learning aids. The use of media or learning aids in the fourth grade at MI Al Ma'arif Sidolaju is still relatively low. Interviews with students revealed that during learning activities, teachers often write material on the board, then explain the material, and then work on practice questions. This type of learning activity often makes students bored and less motivated to learn.

Family situation. The family is the closest environment for students. Within the family, there is an emotional bond between students and their parents. Therefore, the family plays the most significant role in student growth and development. Given the importance of the family in student development, families and parents should pay more attention, especially to the learning process, to address any learning difficulties experienced by students.

### **Characteristics of Mathematics Learning Difficulties**

The United States Office of Education (USOE) states that learning disabilities are disorders that affect one or more basic psychological processes. These difficulties take various forms, including hearing, speaking, thinking, writing and/or reading, arithmetic, and so on. These disorders are caused by hearing and/or visual impairments, as well as mental or emotional disorders. Furthermore, environmental, cultural, economic, and family factors also contribute to learning disabilities (Susanto et al., 2024).

Learning difficulties are related to social interactions in the teaching and learning process, and there are several other factors that cause learning difficulties, namely inappropriate learning foundations, less conducive environments, less supportive learning atmospheres, as well as teaching design and methods of delivering material. Factors that influence learning difficulties are internal factors originating from oneself which include two aspects, namely physiological (physical) aspects, and psychological (spiritual) aspects, while external factors originating from outside the student also consist of two types, namely social environmental factors, and non-social environmental factors (Fahira et al., 2023).

Learning difficulties can also be defined as a child's inability to complete assigned tasks. These learning difficulties are real disorders in children related to general and specific tasks, which are thought to be caused by neurological dysfunction, psychological processes, or other causes. Therefore, children who experience difficulties in learning in a class show low achievement (Mario Mario, 2023). Learning difficulties, or learning disabilities, commonly referred to as learning disorders, are conditions in which students cannot learn properly. This

is caused by threats, obstacles, or learning disorders. In other words, these learning difficulties arise because students feel uncomfortable during lessons or because of coercion from those around them (Mutiaty et al., 2025).

The National Joint Committee on Learning Disabilities (NJCLD) states that a learning disability refers to a group of difficulties manifested by significant difficulties in the acquisition and use of listening, speaking, reading, writing, reasoning, or mathematics skills (Triani et al., 2023). Another definition states that a learning disability is a significant impairment in individuals who have adequate nervous system function and adequate opportunities to learn. A learning disability can affect self-esteem, education, employment, socialization, and activities of daily living.

From the description above, it can be explained that the learning difficulties experienced by students are a condition of students' unpreparedness in receiving new information. This unpreparedness is caused by students' physiological and psychological conditions, which result in decreased learning motivation and decreased student achievement. If this condition is left untreated, it can affect students' psychological condition, because this condition is directly related to the student's internal condition, both physiologically and psychologically. Each student who experiences difficulty learning mathematics can display different characteristics. There are eight characteristics commonly seen in students who experience difficulty learning mathematics.

Some students struggle to grasp the concept of spatial relationships. They struggle to visualize or understand the concept of direction and objects or shapes interacting in space. Some students also struggle to understand the concepts of direction and time. They may have difficulty recognizing and understanding concepts like left, right, up, down, before, and after. Some students may experience visual-spatial perceptual disorders. This means they may have difficulty processing visual and spatial information correctly. For example, they may have difficulty distinguishing shapes or memorizing patterns.

Visual-motor association can also be a challenge for some students. This means they may have difficulty connecting visual information with physical movements. For example, they may have difficulty imitating movement patterns or drawing mathematical shapes. Some students have difficulty recognizing and understanding mathematical symbols. They may have difficulty understanding the meaning and function of mathematical symbols such as numbers, mathematical operations, or other symbols. Perception can also be a barrier.

Some students may struggle to process information accurately and consistently. They may have trouble recognizing patterns, memorizing math facts, or noticing important details.

Some students experience difficulties with spoken and written language. They may have difficulty understanding verbal instructions or expressing their mathematical understanding verbally. This can impact their ability to verbally solve math problems.

There are prerequisite skills that can be a barrier. Some students may struggle to understand or master the skills that underlie mathematics, such as recognizing patterns, memorizing basic math facts, or performing arithmetic operations.

The characteristics of learning difficulties experienced by fourth-grade students of MI Al Ma'arif Sidolaju during learning are prerequisite skills, namely difficulties in mastering arithmetic operations, and difficulties in spoken and written language, namely difficulties in understanding oral instructions or expressing mathematical understanding in written form. Based on the results of interviews with fourth-grade teachers, there are still some students who do not understand number arithmetic operations and story problems. Meanwhile, based on the results of observations, it appears that many students do not memorize basic multiplication 1-10, so that in arithmetic operations, students are confused and do not know how. Based on the results of observations in the field, data obtained that students who experience difficulties in learning can be seen from the signs that appear in students. These signs are as follows:

Students show fear or lack of confidence when participating in learning activities. Students show delays in completing assigned tasks. Students show boredom or lack of interest in learning.

This is in line with the results of an interview with Y, a fourth-grade student: "Every time we have math class, my friends and I start to feel lazy about following the lesson, so we chat or play at our desks to avoid getting bored. When explaining on the blackboard, sometimes the teacher doesn't pay enough attention to us."

In addition, Mr. Munif as a fourth grade teacher also said that, "Usually when I start teaching mathematics, some students start to show dislike and discomfort, maybe because they are afraid that I will ask them to come to the front to solve the problems I give, besides that sometimes they are busy playing alone with objects on their desks, or also chatting with their deskmates, they will

just be quiet when I call one of their friends so that they return to paying attention to the explanation I am giving. But that's how it is, maybe because it is already firmly ingrained in their minds, that mathematics is a difficult and boring subject."

In this study, the subject of the study was mathematics learning difficulties measured from three aspects, namely: 1) difficulty understanding basic concepts, 2) difficulty remembering formulas, and 3) difficulty understanding and solving problems. According to the researcher, these three aspects of learning difficulties are the main aspects that greatly affect student development, especially psychological development. In accordance with the description above, mathematics is a subject that plays an important role in life, this can be seen that mathematics lessons are general knowledge, and are learning materials that can improve thinking and argumentation skills, and contribute to solving problems in everyday life.

Based on the results of observations and interviews with participants regarding the three aspects of learning difficulties, it can be described as follows, difficulty in understanding basic concepts. Difficulty understanding concepts in mathematics learning is a condition in which a person experiences obstacles in understanding, applying, and connecting basic mathematical principles. This difficulty can lead to an inability to solve problems, understand formulas, or difficulty applying mathematics in everyday life. Difficulty understanding basic mathematical concepts in elementary school students is usually caused by internal factors, or factors originating from within the students themselves, such as a lack of motivation to learn mathematics, feeling that mathematics is a difficult subject to understand, and considering mathematics as a boring subject. This is in line with the results of an interview with one of the students who stated that:

"Mathematics is a difficult subject, because it requires memorization and calculation. I don't like memorizing formulas, so I don't like math. Every time math class starts, I always want to leave the class so I don't get bored." From the statement above, it can be concluded that the difficulty in understanding basic concepts arises because students already have the assumption that mathematics is a difficult subject, because it contains formulas that must be memorized, and also has several ways to solve them.

Difficulty remembering formulas. Students have difficulty remembering mathematical formulas, such as arithmetic operations, geometry, and algebra.

This difficulty occurs because students have weak memory, due to lack of practice remembering existing formulas and practice in solving math problems. Based on the results of interviews with fourth-grade teachers, data was obtained that some students have difficulty memorizing formulas. If they memorize them today, they may not be able to memorize them tomorrow when asked again. In mathematics lessons, memorizing formulas is a must, because mathematics lessons will always touch on formulas in every material studied.

Difficulty in understanding and solving problems. Students have difficulty in understanding and solving math problems, both story problems and calculation problems. Based on the interview results, fourth grade students of MI Al Ma'arif Sidolaju have learning difficulties in the form of difficulties in spoken and written language, namely difficulties in understanding oral instructions and expressing mathematical understanding in written form. This can be seen from the students' learning outcomes when working on practice questions in the form of story problems. Many students misunderstand the sentences in the questions, in addition to difficulties in understanding written language, it is also caused by low reading literacy of students. Therefore, there is a need for assistance in terms of improving the quality of student literacy so that students have the ability to understand written language contained in story problems.

### **Teachers' Efforts to Overcome Learning Difficulties**

Every elementary school student has the right to achieve maximum academic achievement. Each student has different physical abilities, family backgrounds, economic backgrounds, intelligence, and learning approaches. This reflects the unique characteristics of each student. One of the differences experienced by students in the learning process is learning difficulties, a condition in which students face difficulties in following the lesson effectively. Suboptimal adjustment to learning can also be a contributing factor to learning difficulties. These learning difficulties can make students feel uncomfortable while learning. Mathematics is often considered a boring subject, so many students do not demonstrate their maximum ability in learning it. Identifying these factors is indeed complex. However, these factors influence students' ability to receive and understand information or learning materials.

It is important for teachers and parents to address learning difficulties experienced by students, as unaddressed learning difficulties will make it difficult for students to understand the subject matter. In this case, a fourth-grade teacher recognized that some students were having difficulty learning

mathematics, as evidenced by their relatively low learning outcomes. Therefore, educators must possess basic skills and competencies in formulating and managing classroom activities that are enjoyable and meaningful for students. Furthermore, the educator's ability to communicate with students is also crucial (Aula & Fithriyah, 2025).

Based on the results of observations and interviews, teachers have tried to help students overcome their learning difficulties by providing continuous motivation, providing special assistance to students who experience learning difficulties, and establishing communication with parents to exchange information about students' learning conditions both at home and at school. In addition, teachers have also begun to change their teaching methods, namely by designing fun learning activities, using a variety of learning media, and using simple language when delivering lesson materials, for example by providing examples with real-life connections when explaining lesson materials or giving assignments.

Based on research presented by Nur (2023) regarding teachers' efforts to overcome learning difficulties, among others: teachers start with a personal approach, create a fun and meaningful learning environment, deliver material in simple sentences, establish good communication with students' parents, and adapt the learning approach to the students' character.

This activity is carried out so that students do not feel bored while participating in learning. In addition, it is so that students feel like they are actors in the learning activities or examples given by the teacher. Thus, students will be more interested and motivated to study harder, and also train students to think critically, because students must analyze the examples given by the teacher. In improving student skills in learning activities, namely establishing good communication with friends and teachers (in this case with someone who has more knowledge) (Satriyawan et al., 2025). A teacher must have experience in managing a class, thus teaching experience is important in increasing student creativity in participating in learning activities. And collaboration with students' parents is also necessary (Adewale & Moyo, 2025).

## **CONCLUSION**

Based on the results of research through observation, interviews, and documentation that have been carried out in class IV MI Al Ma'arif Sidolaju, the following conclusions can be drawn, Characteristics of learning difficulties experienced by fourth grade students during learning include prerequisite skills,

namely difficulties in mastering arithmetic operations, and difficulties in spoken and written language, namely difficulties in understanding oral instructions or expressing mathematical understanding in writing. Factors causing students' learning difficulties in mathematics learning include internal factors (factors that arise from within the student), namely lack of basic abilities (intelligence), learning motivation, and physical health, external factors (factors that arise from outside the student), namely the use of media or learning aids, and family situations.

And the efforts made by the fourth grade teacher of MI Al Ma'arif Sidolaju to overcome students' learning difficulties, the teacher tries to provide continuous motivation, provide special assistance for students who need attention through personal guidance or small groups, so that students are able to understand the lesson optimally and in addition the teacher also designs more innovative learning activities so that students do not feel bored when participating in learning activities. For further research, it is recommended to examine further the learning difficulties of students from lower to higher grades in the elementary school environment and identify factors that influence their improvement.

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